STATE OF SOUTH CAROLINA
BEFORE THE PUBLIC SERVICE COMMISSION
DOCKET NO. 2018-9-E

In the Matter of:	)	COMMENTS OF SOUTH CAROLINA COASTAL CONSERVATION LEAGUE AND SOUTHERN ALLIANCE FOR CLEAN ENERGY
South Carolina Electric & Gas Company's Integrated Resource Plan	)	

The South Carolina Coastal Conservation League ("CCL") and Southern Alliance for Clean Energy ("SACE") (collectively, the "Conservation Groups") respectfully submit the following comments to the Public Service Commission of South Carolina ("Commission") on the 2018 Integrated Resource Plan ("IRP") of South Carolina Electric & Gas Company ("SCE&G" or "the Company").

For years, the Conservation Groups have implored SCE&G and this Commission to take integrated resource planning seriously. When performed correctly, the IRP process allows utility planners to "address complex issues in a structured, inclusive, and transparent manner,"[1] and arrive at a plan that minimizes total system costs. The IRP also serves as the basis for the Company's avoided cost calculations and decisions to add new generating resources. When the Company fails to consider a variety of resource alternatives across possible scenarios, the Commission and the public are deprived of the opportunity to determine whether the Company's plan is truly the least-cost result. For instance, V.C. Summer Units 2 and 3 served as the linchpin of SCE&G's IRPs between 2007 and 2017, while the Company and this Commission ignored the possibility of delays and refused to evaluate lower-cost resource options, even as the inevitability of abandonment became obvious. As the Commission is aware, the Company's plans did not

[1] Best Practices Guide: Integrated Resource Planning for Electricity, U.S. Agency for International Development, Office of Energy, Environment, and Technology, available at http://pdf.usaid.gov/pdf_docs/PNACQ960.pdf.

produce a "least-cost" result. 18% of SCE&G customers' bills now go toward an abandoned nuclear plant that turned out to be a multi-billion-dollar disaster for SCE&G and its ratepayers.

SCE&G's 2018 IRP is its first 15-year plan following abandonment of the V.C. Summer units. If implemented, the elements of this plan will determine SCE&G's ratepayer costs for years to come. Unfortunately, the 2018 IRP shows that the Company has not learned from past mistakes. As these comments will discuss, the assumptions and studies that underlie the Company's latest load forecasts and resource selection process are biased to overestimate capacity and energy needs and fill those purported needs with a large gas-fired power plant. This and other aspects of the Company's 2018 plan run afoul of the IRP requirements set out in Commission Orders and state statute.

CCL and SACE urge the Commission to use its authority to determine that SCE&G's IRP defies both state law and common sense, and to require SCE&G to redo and refile its IRP so that South Carolina ratepayers are finally provided a transparent, thorough examination of resource alternatives.

I. Integrated Resource Plan Requirements in South Carolina

IRPs filed with this Commission must contain the following information[2]:

1. The demand and energy forecast for at least a 15-year period.
2. The supplier's or producer's program for meeting the requirements shown in its forecast in an economic and reliable manner, including both demand-side and supply-side options.
3. A brief description and summary of cost-benefit analysis, if available, of each option considered, including those not selected.

[2] The Commission's IRP filing requirements detailed in Order Nos. 1998-502 and 2012-96 track the statutory definition of an IRP set out in S.C. Code Ann. § 58-37-10 (2010).

4. The supplier's and producer's assumptions and conclusions with respect to the effect of the plan on the cost and reliability of energy service, and a description of the external, environmental and economic consequences of the plan to the extent practicable.

Order No. 2012-96. The Commission can require utilities to submit "additional filings" or "any other information as determined appropriate from time to time." *Id.*; Order No. 1998-502

The Commission developed an integrated resource planning process in 1987 to address least cost planning procedures for investor owned electric utilities. Docket No. 1987-223-E. Least cost planning, as the Commission defined it, "refers to efforts by utilities and regulators to ensure that the lowest cost options to the ratepayers and utilities are integrated into the designing resource plans for the provision of energy services to customers." Order No. 1987-569. In 1991, the Commission reiterated that the overall objective of the process was to develop a plan that "results in the minimization of the long run total costs of the utility's overall system and produces the least cost to the consumer consistent with the availability of an adequate and reliable supply of electricity while maintaining system flexibility and considering environmental impacts." Appendix A at 1, Order 1991-1002 (emphasis added). The Commission also adopted a procedure for integrated resource planning in that 1991 Order.

In 1998, the Commission modified the IRP reporting requirements to their present form. Order No. 1998-502. In doing so, the Commission did not alter the objective of the IRP process, which is to determine the optimal, least cost resource mix.[3] This objective aligns with other state and federal goals and requirements. It furthers the State Energy Plan goals to "ensure access to energy supplies at the lowest practical environmental and economic cost" and "ensure that

[3] In fact, the SCE&G continued to submit its IRP filings under the header of "least-cost planning procedures for electric utilities" through at least 2007: https://dms.psc.sc.gov/attachments/matter/48231FFA-0623-3B04-1068A194A3FB1494, and the Company continues to dub its selected plan "least-cost." SCE&G's Response to the Conservation Groups' Third Data Request in Docket 2018-2-E, p. 4.

demand-side options are pursued wherever economically and environmentally practical" S.C. Code § 48-52-210. It is also required by FERC Order 69, which states that the evaluation SCE&G performs to calculate avoided cost must be performed based on "the utility's optimal capacity expansion plan," defined as "the schedule for the addition of new generating and transmission facilities which, based on an examination of capital, fuel, operating and maintenance costs, will meet a utility's projected load requirements at the lowest cost." Federal Register, Vol 45 No 38, page 12216.

II. SCE&G Did Not Even Attempt to Develop an Optimal, Least-Cost Plan

In comments over the last seven years, CCL and SACE repeatedly criticized SCE&G's IRPs as devoid of the basic components necessary to determine the optimal, least-cost resource mix. Year after year, the Company presented its preferred resource portfolio—featuring the new V.C. Summer units as its cornerstone—without any evaluation of the costs and risks of this portfolio or of alternative potential resource portfolios across future scenarios. Now that the V.C. Summer units have been abandoned, the Company has swapped out the core of its plan from new nuclear units to new gas combined cycle units, but has not wavered in its presentation of a single resource portfolio. As explained in greater detail below, not only was this portfolio based on an inflated load forecast and excessive reserve margin, it was developed using a spreadsheet that lacks optimization capability, and without any scenario analysis. The result of this flawed, simplistic analysis is that SCE&G is proposing to add gas combined cycle units and continue investment in aging coal plants to keep them operational. At the same time, the Company is giving short shrift to cost-effective energy efficiency and demand side management, which not only can help delay or avoid new power plant construction, but also are the best way for customers to control their bills.

The Company baldly asserts that the plan reported in the 2018 IRP is the "least cost plan, i.e., the plan with the lowest accumulated present worth of annual costs[.]"[4] Without knowing which alternatives SCE&G considered and rejected, however, it is impossible for the Commission and the public to know whether SCE&G has produced a least-cost plan.

III. Order No. 1998-502 Requirement 1: "the demand and energy forecast for at least a 15-year period"

SCE&G's 2018 IRP starts with a flawed premise: an inflated demand and energy forecast. The forecast, in turn, is informed by a new reserve margin study, replacing its last study from 2012, as well as new winter peak projections that have led the Company to conclude that it is now a "winter-peaking" utility. The planning reserve margin is meant to provide a cushion in case of extreme weather events and/or unexpected outages in capacity during times of peak demand. While it is important for SCE&G to maintain reliability, an excessive reserve margin unjustifiably increases costs for customers because it requires the Company to have more capacity available than necessary to meet peak demand for energy and capacity.[5] Similarly, an inflated winter peak forecast overestimates the amount of capacity and energy the Company will need, driving costly resource acquisitions over the 15-year IRP period.

In a recent proceeding on SCE&G's fuel costs, the Conservation Groups and Office of Regulatory Staff identified several flaws in the Company's forecasts and reserve margin. *See* Direct and Surrebuttal Testimony of Brian Horii, and Direct and Surrebuttal Testimony of Devi Glick. Though the Commission signed off on the Company's reserve margin in the latest fuel cost docket, the Commission noted that the forecast and "significant reserve margin" "remain[] a subject upon which alternative calculation" will be entertained in the future dockets. The

[4] SCE&G's Response to the Conservation Groups' Third Data Request in Docket 2018-2-E, p. 4.
[5] In the fuel cost docket, Witness Glick testified that if SCE&G's reserve margin were 17%—a conservative margin compared to that of peer utilities—new large capacity additions could be delayed at least a year and a half. Overall costs to ratepayers would be lower. Glick Surrebuttal at 9.

Company's new forecast and reserve margin were not adequately explored in the fuel cost docket, and until the Commission holds a hearing that allows intervenors a meaningful opportunity to analyze and cross-examine Company witnesses on these issues, there is significant question as to whether SCE&G's load forecast and reserve margin are consistent with the development of a least-cost plan and therefore meet the first requirement of Order 1998-502.

To ensure that SCE&G is not overestimating its resource needs and overburdening customers with the costs of unnecessary supply, the Conservation Groups request that the Commission: 1) require SCE&G to undertake a thorough review of its entire load forecast (winter, summer and annual load) and present a new forecast to the Commission in a report that addresses the discrepancies noted by the Office of Regulatory Staff and Conservation Groups; 2) require SCE&G to conduct an independent reserve margin study using an industry standard method (Loss of Load Expectation/Loss of Load Probability or Expected Unserved Energy) and balancing risk and ratepayer costs; and 3) hold a hearing with the opportunity for testimony from interested parties and cross examination of Company witnesses.

If the Commission is not inclined to have such a hearing in association with this IRP docket, the Conservation Groups request that the Commission require the Company conduct the above-described analysis, file a report of the analysis in this docket, and allow intervenors and ORS to comment on it. The Commission has the authority to require SCE&G to submit this "additional filing[]" and "other information." Order Numbers 2012-96 and 1998-502. Without adequate review of SCE&G's forecasts on a regular basis, the Company's IRP is not truly a "planning" document. Rather, it becomes a document that merely memorializes a series of decisions that have already been made.

Setting aside the accuracy of SCE&G's winter peak forecast and reserve margin, it is also likely not cost-effective to build peaking resources to meet capacity and energy needs in the few hours that drive the winter peak forecast. Instead, it is much cheaper to invest in demand-response programs to reduce or shift winter peaks. In recognition of this fact, the Commission recently stated that "while . . . there is significant winter need at this time, it is imperative that the Company take all appropriate measures to aggressively pursue economic demand side management and energy efficiency programs, targeted at reducing the winter peak . . . ." Order 2018-322, p. 15. And, once the Company incorporates projections for such programs in its planning, it should ratchet down its winter peak forecast and reserve margin to account for the impacts of those programs.

IV. Order No. 1998-502 Requirement 2: "the supplier's or producer's program for meeting the requirements shown in its forecast in an economic and reliable manner, including both demand-side and supply-side options"

SCE&G's IRP does not evaluate a full range of capacity resources and it is not based on an optimized model. These two elements are necessary for the Company to show that the plan "produces the least cost to the consumer" and that the program is "economic." Without them the IRP fails to meet the requirements of state law, as articulated by this Commission.

a. SCE&G should have compared the economics of alternative portfolios

It is a basic principle of integrated resource planning that a utility must develop a range of potential resource portfolios and analyze those portfolios across alternative future scenarios. A utility should develop resource portfolios using informed and transparent assumptions about the future (e.g., about future fuel prices, technology costs, customer load forecasts, reserve capacity needs, resource availability and retirement, transmission availability, and environmental regulations). Only then can it determine which candidate portfolio will be most "economic" and

result in the lowest cost to customers.[6] At a minimum, given the current low cost and low risk profile of demand-side resources and renewables like solar, at least one portfolio with a high level of demand-side management resources and one portfolio with a high level of renewable resources should be analyzed.

In contrast to a plan developed using basic best practices, SCE&G's 2018 IRP does not reflect an evaluation of multiple portfolios. Instead, it presents a single preferred portfolio that includes adding two new natural gas combined cycle units and operating several old, inefficient fossil fuel plants indefinitely.[7]

Once multiple resource portfolios are developed, the portfolios should be tested under different future scenarios to assess how robust they are, and to enable utilities to adjust as factors like fuel prices, construction costs, environmental regulations and customer energy usage change.[8] A utility should consider a minimum set of alternative scenarios, including scenarios with a price on carbon, elevated natural gas prices compared to the base projection, lower load growth compared to the base projection, and delays and cost increases in the construction of large generating units. The utility should then analyze and report how each resource portfolio performs under all scenarios. And the utility should hold scenarios consistent across each different resource portfolio to allow for an apples-to-apples comparison.[9]

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[6] Rachel Wilson and Bruce Biewald, *Best Practices in Electric Utility Integrated Resource Planning* (June 2013), http://www.raponline.org/wp-content/uploads/2016/05/rapsynapse-wilsonbiewald-bestpracticesinirp-2013-jun-21.pdf; Rachel Wilson and Paul Peterson, *A Brief Survey of State Integrated Resource Planning Rules and Requirements* (Apr. 28, 2011), http://www.cleanskies.org/wp-content/uploads/2011/05/ACSF_IRP-Survey_Final_2011-04-28.pdf; *Best Practices Guide: Integrated Resource Planning for Electricity*, U.S. Agency for International Development, Office of Energy, Environment, and Technology, http://pdf.usaid.gov/pdf_docs/PNACQ960.pdf.

[7] McMeekin is 60 years old; Urquhart 3 is 57; Wateree is 48; Williams is 45.

[8] *Id.*

[9] For example, a scenario could be designed to represent a future where a price is placed on CO_2 emissions and where natural gas prices are significantly elevated. Each resource portfolio would be tested under that scenario, using the same CO_2 price and gas price assumptions for each resource portfolio.

In developing its 2018 IRP, SCE&G failed to analyze its preferred portfolio—let alone any alternative portfolios with more renewable or energy efficiency resources—across multiple future scenarios. SCE&G's failure to follow best practices in an atmosphere of great uncertainty, when those best practices are most necessary, should cause this Commission to question whether the Company will pursue the least cost plan moving forward. In fact—though it is incumbent upon the utility to conduct an analysis comparing alternative options, since it has the obligation to provide least-cost service—an analysis presented to the Commission last year indicated that SCE&G customers could save at least $600 million over the next several decades by relying less on natural gas and more on energy efficiency programs and solar power.[10] These hundreds of millions of dollars in cost savings could be achieved with investments in efficiency and solar on par with those of well-performing peer utilities. The analysis assumed the same level of growth in SCE&G territory that the Company predicted in its 2017 IRP and concludes that an efficiency and solar strategy could also avoid $2 to $4 billion of additional risk in the event that a carbon price is imposed or natural gas prices increase. This analysis is not a substitute for capacity expansion and production cost modeling because it does not optimize for a particular outcome. But it provides a good example of the information the utility should be providing to the Commission and the public: several portfolios compared on a transparent economic basis, with defensible assumptions about lifespan, capital expenditures, natural gas fuel supply costs, retirement age, and environmental requirements.

b. SCE&G's use of a spreadsheet to develop its capacity expansion plan is inappropriate and biases the plan against demand-side options

Rather than analyzing a range of resource portfolios, SCE&G divulged in the recent fuel cost docket that it does not even use a model with the capability to optimize for a particular

[10] Greenlink Analysis: Ex Parte Briefing to South Carolina Public Service Commission on SCE&G's Generating Capacity Options. https://dms.psc.sc.gov/Web/Matters/Detail/273344.

outcome, such as least cost.[11] Remarkably, the Company instead uses an Excel spreadsheet analysis to make multi-billion-dollar resource investment decisions. In the recent hearing on SCE&G's avoided costs, the Company's Manager of Resource Planning conceded that he is not aware of any other utility that uses an Excel spreadsheet to determine its IRP capacity plan, as opposed to an optimization model such as Strategist, PROMOD, Midas, System Optimizer or AURORA. *Id*. at p. E-209.

Using its simple spreadsheet tool, the Company actually analyzed only two resource options for meeting its first identified capacity need in 2023: a gas-fired peaking turbine and a gas-fired combined cycle plant. The Company did not compare the cost-effectiveness of these gas plants to market purchases of power, solar, energy efficiency, or battery storage. While the Company "baked in" a pre-set amount of demand-side management ("DSM") to its resource plan, it did not size its DSM programs based on cost and did not allow these resources to compete against its selected 540 MW combined cycle on the basis of cost.[12]

The Company's treatment of energy efficiency and DSM in its resource plan is especially problematic given the Company's assertion that inefficient heating sources are driving its winter peak.[13] In the 2018 IRP the Company provides no description of how it developed its assumptions about demand response resources. Instead, SCE&G representatives state that they "assumed that a demand response program of 100 MWs can be implemented by 2020 and add it to the plan."[14] SCE&G's DSM programs have been cost-effective from their inception and continue to be cost-effective today.[15] There is absolutely no reason why SCE&G should not

[11] Docket No. 2018-2-E, Hearing Transcript at p. E-212.
[12] *Id*. at E-215 – 216; SCE&G response to CCL and SACE's third data request in Docket No. 2018-2-E.
[13] *See* Docket No. 2018-2-E, Rebuttal Testimony of Joseph Lynch at 7 and 9.
[14] SCE&G response to CCL and SACE's third data request in Docket No. 2018-2-E.
[15] S.C. Code Ann. §58-37-20 provides that an incentive must be provided to an electric utility investing in a DSM program that is "cost-effective, environmentally acceptable and reduce[s] energy consumption on demand."

allow demand response and energy efficiency to compete with other resources. Its failure to fully examine a resource that is by definition lower-cost than other energy sources means that the Company has not presented an "economic" plan. To say that the Company's plan is the "least-cost plan, i.e. the plan with the lowest accumulated present worth of annual costs,"[16] when the Company looked only at natural gas plant options, is like comparing the prices of a BMW, Aston Martin, and Ferrari, and concluding that a BMW is the least-cost car available on the market

c. Resource plan relief

The Commission should determine that SCE&G has failed to include an "economic" resource plan in its latest IRP submission. To ensure that the Company complies with its requirements, the Commission should require the Company to resubmit an IRP that compares the economics of alternative portfolios, including portfolios featuring unit retirements, and tests those resource portfolios across a variety of scenarios. Each portfolio should include reasonable assumptions that are clearly disclosed in the IRP. In the fuel cost docket, the Commission directed SCE&G to "investigate and implement economic demand side management and energy efficiency programs with an emphasis on decreasing the newly developed winter peak." Order No. 2018-322, at p. 46; *id.* at p. 15 ("It is imperative that the Company take all appropriate measures to aggressively pursue economic demand side management and energy efficiency programs . . ."). At a minimum, SCE&G's submission should include at least one high energy efficiency and DSM portfolio, and it should also allow energy efficiency and DSM to compete with resources in all of its portfolios.

V. Order No. 1998-502 Requirement 3: "a brief description and summary of cost-benefit analysis, if available, of each option, which was considered, including those not selected."

SCE&G's noncompliance with the requirements discussed above means that the

[16] SCE&G response to CCL and SACE's third data request in Docket No. 2018-2-E.

Company should be presenting far more cost-benefit analyses of multiple portfolios. The Conservation Groups request that the Commission determine that the Company is not in compliance with requirement 3 in this regard, and that the Company be required to present descriptions and summaries of those analyses in a revised filing.

In addition, the Conservation Groups ask that the Commission determine that the Company's filing is deficient because it does not provide descriptions or summaries of the cost-benefit analyses of the few resource alternatives the Company did consider. It appears that the Company considered at least three different alternatives, but did not provide sufficient information about those alternatives in its IRP.

First, the Company notes on pages 38-39 of its IRP that it considered four options related to V.C. Summer Units 2 and 3 in response to the Westinghouse bankruptcy: 1) complete both units, 2) complete one unit and delay completion of the other unit, 3) complete one unit and abandon the other unit, 4) abandon both units. The Company's 2018 IRP adopts the fourth option without describing the cost-benefit analysis the Company undertook to select that option or summarizing the outcome of that analysis. When the Conservation Groups asked the Company for this information in a data request, the Company responded that it was attorney-client privileged. This is unacceptable under Commission Order No. 1998-502, which sets out that "electric utilities may request that information deemed confidential or proprietary be held in confidentiality by this Commission. The Commission may then make a decision on whether or not to grant a request for confidentiality[.]" This order dictates that the Company was required to ask the Commission to withhold the information from the public;[17] the Company may not

[17] South Carolina law mandates that "[e]ach electrical utility . . . must obey and comply with all requirements of every order, decision, direction, rule or regulation made or prescribed by the Public Service Commission or every direction, rule, or regulation made or prescribed by the Office of Regulatory Staff pursuant to this chapter or in relation to any other matter relating to or affecting the business of the electrical utility . . . and must do everything

withhold the information and later assert privilege in response to an intervenor data request.

Second, the Conservation Groups discovered through data requests that the Company completed, but did not disclose in its IRP, an analysis of purchasing the Columbia Energy Center. The Company's 2018 IRP adopts the option of purchasing the Columbia Energy Center without retiring any coal or natural gas units in the 15-year IRP time horizon and without describing the cost-benefit analysis the Company undertook to select that option or summarizing the outcome of that analysis.

Third, the Company stated in response to data requests that it conducted the following analyses in 2017: "MCM Turbine Repair," "Fairfield Parr Relicensing," "Additional Capacity at Hagood," and "Capacity and Energy Value at Saluda."[18] The Company also analyzed whether to build a combined cycle or internal combustion turbine in 2023.[19] Again, the Company did not describe these cost-benefit analyses in its IRP or summarize the outcomes of those analyses.

This Commission has stated that a "transparent and open [IRP] process . . . allows for increased sharing of information and ideas, which is valuable to all interested parties." Order No. 2012-95. The Conservation Groups agree, and believe that the Company's failure to provide a description and summary of even the few cost-benefit analyses that the Company did conduct (relative to the number of analyses the Conservation Groups assert are necessary to comply with requirement 2, as detailed above) undermines the process.

VI. Order No. 1998-502 Requirement 4: "the supplier's and producer's assumptions and conclusions with respect to the effect of the plan on the cost and reliability of energy service, and a description of the external, environment, and economic consequences of the plan to the extent practicable."

The Company's 2018 IRP also violates the requirement that it include its assumptions

necessary or proper to comply with and observe every order, decision, direction, rule, or regulation by all of its officers, agents and employees." S.C. Code § 58-27-40.

[18] Provided in SCE&G's Response to Request 3 of the Conservation Groups' First Data Request for the 2018 IRP.

[19] Docket No. 2018-2-E, Hearing Transcript at pp. E- 215-216.

and conclusions related to the effect of the plan on the cost and reliability of service, by failing to detail how its continued investment in fossil fuel plants will increase emissions and subject customers to potential price volatility. This is most obvious in the way the Company declines to disclose how its decision to continue operating its aging coal and gas units, several of which are more than 50 years old,[20] will impact emissions of carbon dioxide and other pollutants. Only in response to a data request did the Company explain that CO_2 emission spikes in 2018 and 2023 were related to nuclear refueling and gas plant outages.[21] The Company also did not explore or disclose the costs and consequences of continued gas plant operations and additions given the Company's reliance on firm transportation interstate pipeline capacity.[22]

More broadly, the deficiencies in the Company's forecast assumptions and resource selection model also clearly impact the cost and reliability of energy service, in that they dictate the avoided cost rate and "bake in" a certain, pre-set amount of winter EE/DSM investment. The Company did not compare the cost effectiveness or environmental consequences of the gas resources it intends to add with market purchases of power, solar, energy efficiency, or battery storage.[23] The Commission should require the Company to undertake a study of and present this information.

VII. Conclusion

In light of the foregoing, the Conservation Groups respectfully request that the Commission find that SCE&G's 2018 IRP does not meet the requirements set out in Commission Orders or South Carolina statute, and direct SCE&G to file a revised 2018 IRP that addresses the

[20] McMeekin is 60 years old; Urquhart 3 is 57; Wateree is 48; Williams is 45.
[21] SCE&G's Response to Request 19 of the Conservation Groups' First Data Request for the 2018 IRP.
[22] In SCE&G's Response to Request 18 of the Conservation Groups' First Data Request for the 2018 IRP, the Company states that it may rely on Transco Gas Pipeline, LLC's Southeastern Trail in 2019 and beyond for certain gas units, and that additional gas-fired generation plants—like the one planned for 2023—would "almost certainly require additional" firm transportation capacity.
[23] Docket No. 2018-2-E, Hearing Transcript at pp. E- 215 ln. 24 – E-216 ln. 1.

flaws described in these comments. Specifically, SCE&G should be directed to file a revised IRP that:

1. Corrects the flaws in the Company's reserve margin and load forecast analyses following a hearing where interested parties can provide testimony and cross-examine company witnesses;
2. Analyzes a reasonable range of resource portfolios across alternative scenarios and utilizes consistent outcome metrics to arrive at a preferred resource portfolio and make resource investment and retirement decisions;
3. Discloses the assumptions and results of all analyses conducted in developing the IRP or any capacity expansion plan or resource procurement strategy, along with the economic and environmental consequences of the selected plan relative to the other alternatives that were modeled.

In addition, in light of the fact that the major flaws in SCE&G's 2018 IRP reflect the flaws of the overall IRP process followed by utilities, CCL and SACE request that the Commission require utilities to adopt the following best practices for all future IRPs.[24] Several of these best practices are consensus recommendations from the electric and natural gas resource planning subcommittee in the South Carolina State Energy Plan process.[25]

1. Analyze multiple resource portfolios that include, at minimum, a high demand side management portfolio and a high renewable energy portfolio

[24] Rachel Wilson and Bruce Biewald, *Best Practices in Electric Utility Integrated Resource Planning* (June 2013), http://www.raponline.org/wp-content/uploads/2016/05/rapsynapse-wilsonbiewald-bestpracticesinirp-2013-jun-21.pdf; Rachel Wilson and Paul Peterson, *A Brief Survey of State Integrated Resource Planning Rules and Requirements* (Apr. 28, 2011), http://www.cleanskies.org/wp-content/uploads/2011/05/ACSF_IRP-Survey_Final_2011-04-28.pdf; *Best Practices Guide: Integrated Resource Planning for Electricity*, U.S. Agency for International Development, Office of Energy, Environment, and Technology, http://pdf.usaid.gov/pdf_docs/PNACQ960.pdf.

[25] 2016 South Carolina State Energy Plan Appendices 35-37, http://www.energy.sc.gov/files/view/EP%20APPENDICES%20FINAL_20170227.pdf.

2. Establish a set of scenarios to analyze the robustness of each resource portfolio that includes, at minimum, a scenario with a price on carbon, a scenario with elevated natural gas prices, a scenario with lower load growth, and a scenario with delays and cost overruns in the construction of large, new generation units
    a. Analyze each resource portfolio across all scenarios, and keep scenarios consistent for each resource portfolio
3. Present economic and environmental outcome metrics for all portfolios across all scenarios
    a. Include air emissions, water impacts, and waste disposal costs as environmental outcome metrics
4. Use reasonable, transparent assumptions when forecasting resource needs and costs
    a. Base assumptions on publicly available data whenever possible
    b. Set planning reserve margins based on explicit reliability criteria that do not result in excess capacity and excessive costs.

Respectfully submitted this 4th day of May, 2018.

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